



DEFENSE INFORMATION SYSTEMS AGENCY

JOINT INTEROPERABILITY TEST COMMAND

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FORT HUACHUCA, ARIZONA 85670-2798

IN REPLY
REFER TO:

Battlespace Communications Portfolio (JTE)

22 April 2008

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Special Interoperability Test Certification of the Aethra Vega X3 with Software Release 11.4.14

References: (a) DoD Directive 4630.5, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004
(b) CJCSI 6212.01D, "Interoperability and Supportability of Information Technology and National Security Systems," 8 March 2006
(c) and (d) see enclosure 1

1. References (a) and (b) establish the Defense Information Systems Agency, Joint Interoperability Test Command (JITC), as the responsible organization for interoperability test certification.

2. The Aethra Vega X3 with Software Release 11.4.14 is hereinafter referred to as the System Under Test (SUT). The SUT met all the critical interface and functional interoperability requirements of the Unified Capabilities Requirements, appendix 8, and is certified for joint use on the Defense Switched Network (DSN) as a Video Teleconferencing (VTC) system. The SUT also met the requirements for the International Telecommunication Union - Telecommunication Standardization Sector (ITU-T) H.323 interface standard, however, Assured Service is not yet defined for the ITU-T H.323 interface. Since ITU-T H.323 interfaces do not provide Assured Services during a crisis or contingency, users' access to the DSN will be on a best effort basis. Therefore, Command and Control (C2) VTC users and Special C2 VTC users are not authorized to be served by an ITU-T H.323 interface. The SUT meets the critical interoperability requirements set forth in reference (c) using test procedures derived from reference (d). No other configurations, features, or functions, except those cited within this report, are certified by the JITC or authorized by the Program Management Office for use within the DSN. This certification expires upon changes that affect interoperability, but no later than three years from the date of this memorandum.

3. This certification is based on interoperability testing and review of the vendor's Letters of Compliance (LoC). Interoperability testing was conducted by JITC at the Global Information Grid Network Test Facility, Fort Huachuca, Arizona, from 28 January through 14 March 2008. Review of the LoC was completed on 7 March 2008. The Certification Testing Summary (enclosure 2) documents the test results and describes the test configuration.

4. The Functional Requirements used to evaluate the interoperability of the SUT and the interoperability statuses are indicated in table 1.

Table 1. SUT Functional Requirements and Interoperability Status

Interface	Critical	Certified	Requirements Required or Conditional	Status	UCR Reference
ITU-T H.323	No ¹	Yes ²	The VTC system/endpoints shall meet the requirements of FTR1080B-2002 (R)	Met	A8.5
			ITU-T H.323 in accordance with FTR 1080B-2002 (C)	Met	A8.5
			Layer 3 Differential Service Code Point tagging as specified in UCR paragraph A.3.2.9.2 (C)	Met	A8.5
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference (R)	Met	A8.5
			Audio add-on interface, implemented independently of an IAS, shall be in accordance with UCR, Appendix 7 (CPE) (C)	Met	A8.5
			Physical, electrical, and software characteristics shall not degrade or impair switch and associated network operations (R)	Met	A8.5
ISDN BRI	No ¹	Yes	The VTC system/endpoints shall meet the requirements of FTR 1080B-2002 (R)	Met	A8.5
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference (R)	Met	A8.5
			Audio add-on interface, implemented independently of an IAS, shall be in accordance with UCR, Appendix 7 (CPE) (C)	Met	A8.5
			Integrated BRI interface shall be in conformance with Terminal Adaptor requirements in UCR, Appendix 7 (CPE) (C)	Met	A8.5
			Physical, electrical, and software characteristics of VTU system(s)/ endpoint(s) that are used in the DSN network shall not degrade or impair the serving DSN switch and its associated network operations. (R)	Met	A8.5
	Yes	See note 3.	Security (R)	See note 3.	A8.7
LEGEND: A - UCR Appendix BRI - Basic Rate Interface C - Conditional C2 - Command and Control CPE - Customer Premise Equipment DISA - Defense Information Systems Agency DSN - Defense Switched Network FTR - Federal Telecommunications Recommendation H.320 - Standard for narrowband VTC H.323 - Standard for multi-media communications on packet-based networks IAS - Integrated Access Switch ISDN - Integrated Services Digital Network ITU-T - International Telecommunication Union - Telecommunication Standardization Sector R - Required SUT - System Under Test UCR - Unified Capabilities Requirements VTC - Video Teleconferencing VTU - Video Teleconferencing Unit					
NOTES: 1 The VTC system interface requirements can be met with an ISDN BRI, ISDN PRI, Serial, or ITU-T H.323 interface. 2 The ITU-T H.323 interface is certified for non-C2 use as set forth in appendix 8 of reference (c). Therefore C2 and Special C2 VTC users are not authorized to be served by ITU-T H.323. 3 Security is tested by DISA-led Information Assurance test teams and published in a separate report.					

5. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) System, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at <https://stp.fhu.disa.mil>. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at <http://jit.fhu.disa.mil> (NIPRNet), or <http://199.208.204.125> (SIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at <http://jitc.fhu.disa.mil/tssi>.

JITC Memo, JTE, Special Interoperability Test Certification of the Aethra Vega X3 with Software Release 11.4.14

6. The JITC point of contact is Mr. Steven Lesneski, DSN 879-5400, commercial (520) 538-5400, FAX DSN 879-4347, or e-mail to steven.lesneski@disa.mil. Tracking number for the SUT is 0716301.

FOR THE COMMANDER:

2 Enclosures a/s



RICHARD A. MEADOR

Chief

Battlespace Communications Portfolio

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U.S. Joint Forces Command, J68, Net-Centric Integration, Communications, and Capabilities Division, 1562 Mitscher Ave., Norfolk, VA 23551-2488

Defense Information Systems Agency (DISA), ATTN: GS23 (Mr. McLaughlin), Room 5W23, 5275 Leesburg Pike (RTE 7), Falls Church, VA 22041

ADDITIONAL REFERENCES

- (c) Defense Information Systems Agency, "Department of Defense Networks Unified Capabilities Requirements," 21 December 2007
- (d) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006

CERTIFICATION TESTING SUMMARY

1. SYSTEM TITLE. The Aethra Vega X3 with Software Release 11.4.14 is hereinafter referred to as the System Under Test (SUT).

2. PROPONENT. 21st Theater Support Command (TSC) (Army).

3. PROGRAM MANAGER. Mr. James Jenkins, Chief, G6 Operations, Unit 23203, APO AE, 09263, Email: Jim.Jenkins@eur.army.mil.

4. TESTER. Joint Interoperability Test Command (JITC), Fort Huachuca, Arizona.

5. SYSTEM UNDER TEST DESCRIPTION. The SUT is a high-performance video system. The set-top Video Teleconferencing (VTC) system sets on top of a monitor. The SUT offers the following product features and highlights:

- Supports Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI).
- Supported Standards: International Telecommunication Union - Telecommunication Standardization Sector (ITU-T) H.320 up to 128 kilobits per second (kbps), ITU-T H.323 up to 384 kbps, Session Initiation Protocol (SIP) up to 384 kbps (not certified)
- Audio standards: ITU-T G.711, ITU-T G.722, ITU-T G.722.1, ITU-T G.728, MPEG4 AAC-LD
- Video standards: ITU-T H.261, ITU-T H.263, ITU-T H.263++, ITU-T H.264, ITU-T H.239, ITU-T H.241
- 2-Port 10/100BASE-T full duplex with integrated switch Ethernet
- Inverse Multiplexing ITU-T H.244
- Up to two monitors, wireless remote control, camera, microphone
- Microphones provide a 360 degree range, mute button, up to two microphones in a daisy-chain configuration
- Echo Cancellation, Adaptive Post Filtering, Automatic Gain Control, Automatic Noise Suppression
- Supports point-to-point protocol over Ethernet
- Video formats supported: National Television Standards Committee, Phase Alternate Line, Video Graphics Array, Super Video Graphics Array, Extended Graphics Array

7. REQUIRED SYSTEM INTERFACES. Requirements specific to the SUT and interoperability results are listed in table 2-1. These requirements are derived from the UCR, appendix 8, Interface and Functional Requirements and verified through JITC testing and review of vendor's Letters of Compliance (LoC).

Table 2-1. SUT Functional Requirements and Interoperability Status

Interface	Critical	Certified	Requirements Required or Conditional	Status	UCR Reference
ITU-T H.323	No ¹	Yes ²	The VTC system/endpoints shall meet the requirements of FTR1080B-2002 (R)	Met	A8.5
			ITU-T H.323 in accordance with FTR 1080B-2002 (C)	Met	A8.5
			Layer 3 Differential Service Code Point tagging as specified in UCR paragraph A.3.2.9.2 (C)	Met	A8.5
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference (R)	Met	A8.5
			Audio add-on interface, implemented independently of an IAS, shall be in accordance with UCR, Appendix 7 (CPE) (C)	Met	A8.5
			Physical, electrical, and software characteristics shall not degrade or impair switch and associated network operations (R)	Met	A8.5
ISDN BRI	No ¹	Yes	The VTC system/endpoints shall meet the requirements of FTR 1080B-2002 (R)	Met	A8.5
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference (R)	Met	A8.5
			Audio add-on interface, implemented independently of an IAS, shall be in accordance with UCR, Appendix 7 (CPE) (C)	Met	A8.5
			Integrated BRI interface shall be in conformance with Terminal Adaptor requirements in UCR, Appendix 7 (CPE) (C)	Met	A8.5
			Physical, electrical, and software characteristics of VTU system(s)/ endpoint(s) that are used in the DSN network shall not degrade or impair the serving DSN switch and its associated network operations. (R)	Met	A8.5
	Yes	See note 3.	Security (R)	See note 3.	A8.7
LEGEND: A - UCR Appendix BRI - Basic Rate Interface C - Conditional C2 - Command and Control CPE - Customer Premise Equipment DISA - Defense Information Systems Agency DSN - Defense Switched Network FTR - Federal Telecommunications Recommendation H.320 - Standard for narrowband VTC H.323 - Standard for multi-media communications on packet-based networks IAS - Integrated Access Switch ISDN - Integrated Services Digital Network ITU-T - International Telecommunication Union - Telecommunication Standardization Sector R - Required SUT - System Under Test UCR - Unified Capabilities Requirements VTC - Video Teleconferencing VTU - Video Teleconferencing Unit					
NOTES: 1 The VTC system interface requirements can be met with an ISDN BRI, ISDN PRI, Serial, or ITU-T H.323 interface. 2 The ITU-T H.323 interface is certified for non-C2 use as set forth in appendix 8 of reference (c). Therefore C2 and Special C2 VTC users are not authorized to be served by ITU-T H.323. 3 Security is tested by DISA-led Information Assurance test teams and published in a separate report.					

8. TEST NETWORK DESCRIPTION. The SUT was tested at JITC's Global Information Grid Network Test Facility (GNTF) in a manner and configuration similar to that of the DSN operational environment. Testing the system's required functions and features was conducted using the test configurations depicted in figure 2-2.

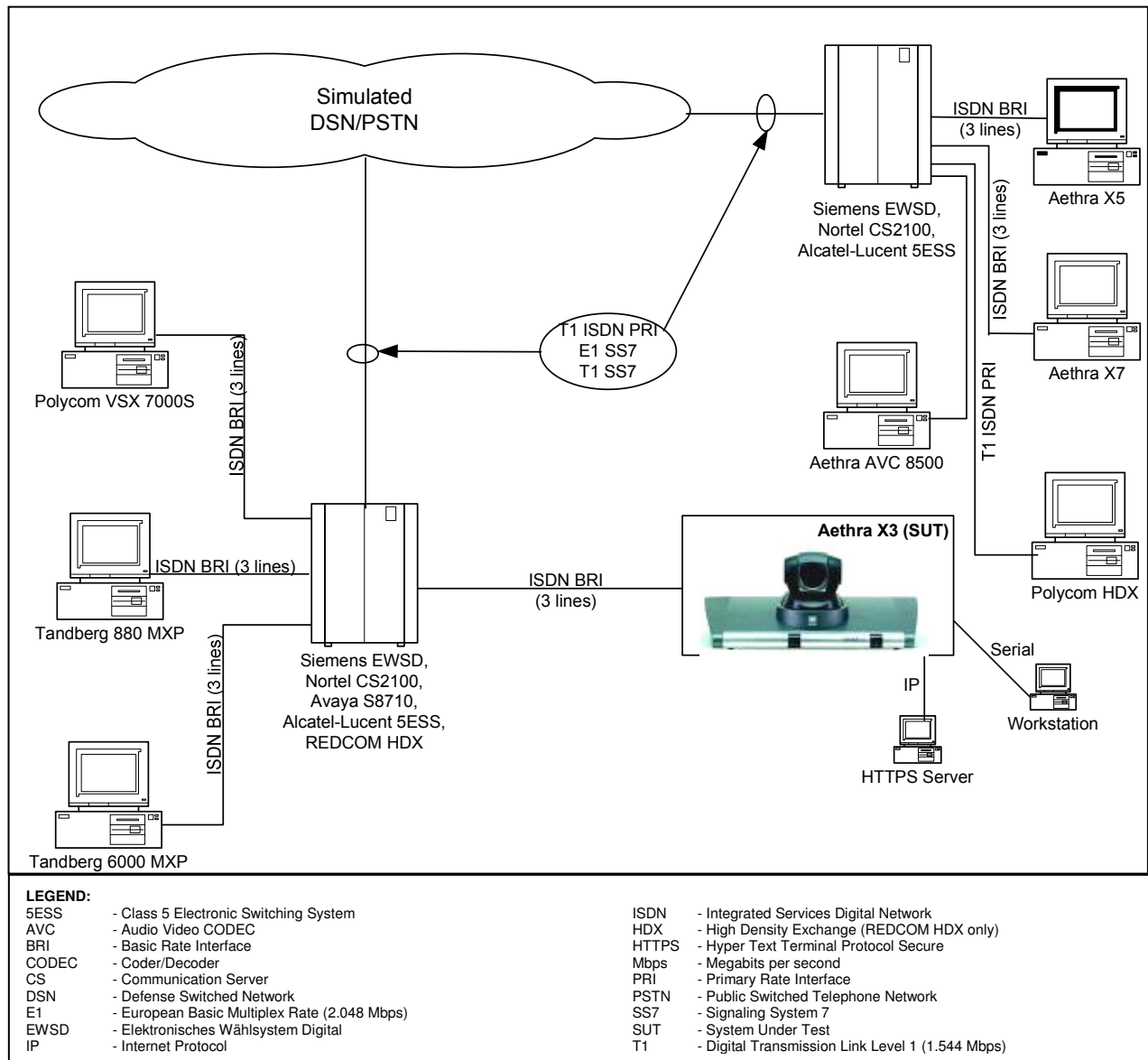


Figure 2-2. SUT ISDN BRI Test Configuration

Table 2-2. Tested System Configurations

System Name	Software Release
Siemens EWSD	19d with Patch Set 46
Nortel CS2100	Succession Enterprise (SE)09.1
Avaya S8710	Communication Manager (CM) 4.0 (R014x.00.2.731.7: Super Patch 14419)
Redcom HDX	2.0A R3P0
Alcatel-Lucent 5ESS	5E16.2, Broadcast Warning Message (BWM) 07-0003
Tandberg 6000	B9.1 NTSC
Adtran 512 IMUX	Firmware Version CS.0, Cksum10b2
Adtran 512 IMUX	Firmware Version F.00, Cksum2d44
Tandberg 6000	B9.1 NTSC
Tandberg 6000 MXP	F2.3 NTSC
Tandberg 880 MXP	F2.1 NTSC
Polycom VSX 7000S	Release 8.5
Aethra AVC 8500	11.4.14
Aethra X5	11.4.14
Aethra X7	11.4.14
Aethra X3 (SUT)	11.4.14
LEGEND: 5ESS - Class 5 Electronic Switching System AVC - Audio Video CODEC CODEC - coder/decoder CS - Communications Server EWSD - Elektronisches Wählsystem Digital HDX - High Density Exchange (REDCOM HDX only) IMUX - Inverse Multiplexer NTSC - National Television Standards Committee SUT - System Under Test	

10. TEST LIMITATIONS. None.

11. TEST RESULTS

a. Discussion. The SUT minimum critical interoperability interface and functional requirements were met through both interoperability certification testing conducted at the JITC GNTF and review of the vendor's LoC. Bonding mode 1 was tested to requirements defined in UCR, paragraph A8.5 and Federal Telecommunications Recommendation 1080B-2002. Bonding, often referred to as channel aggregation, takes place through inverse multiplexing. Inverse multiplexing takes a high-bandwidth signal and splits it for transport through the network over multiple lower-bandwidth channels. At the receiving end, the multiple, lower-bandwidth signals are recombined into the original high-bandwidth signal. A passed test result was based on 100 percent of the calls receiving a score of four or better on the subjective quality scale as defined in table 2-3.

Table 2-3. Video and Voice Subjective Quality Scale

Rating	Reference	Definition
1	<i>Unusable</i>	<u>Quality is unusable.</u> Voice and video may be heard and seen but is unrecognizable.
2	<i>Poor</i>	<u>Quality is unusable.</u> Words and phrases are not fully understandable or video cannot be properly identified.
3	<i>Fair</i>	<u>Quality is seriously affected by distortion.</u> Repeating words and phrases are required to convey speech or video is seriously impacted and barely recognizable.
4	<i>Good</i>	<u>Quality is usable.</u> Audio or video is not impaired but some distortion is noticeable
5	<i>Excellent</i>	<u>Quality is unaffected.</u> No discernable problems with either audio or video.
NOTE: Audio and video quality during a conference will receive a subjective rating on the Data Collection Form. A rating of lower than 4 on this reference scale is considered a failure.		

b. Test Conduct. Multiple two-way 112 - 384-kbps bonding mode 1 Multipoint and Point-to-Point test calls at different durations (15-minute, 30-minute, 1-hour, 24-hours, and 48-hours) were placed over the test network shown in figure 2-2 via all the combinations depicted in table 2-1. The Multipoint and Point-to-Point bonding mode 1 VTC test calls were placed at various precedence levels over the test configurations depicted in figures 2-2 and 2-3.

Seven- and ten-digit calls were placed to verify that the SUT met the capability to support both the North American Numbering Plan and the DSN World Wide Numbering and Dialing Plan (WWNDP) defined in UCR, paragraph A8.5. Multilevel precedence video calls were placed from the SUT and established within the DSN at the respective precedence level dialing the DSN WWNDP access code.

The UCR, paragraph A8.5 requirements state:

(1) The VTC system/endpoints shall meet the requirements of FTR 1080B-2002. The SUT met this requirement through testing and the vendor's LoC.

(2) The VTC features and functions used in conjunction with IP network services shall meet the requirements of ITU-T H.323 in accordance with FTR 1080B-2002. The SUT met this requirement through testing and the vendor's LoC. Additionally, ITU-T H.323 video end instruments must meet the tagging requirements as specified in UCR, appendix 3, section A3.2.9.2. The SUT is required to support the 6-bit Differential Service Code Point (DSCP) tagging assignment of 0-63 and it does. During testing, the SUT properly assigned signaling with a DSCP value of 48, and video media with a DSCP value of 46.

(3) A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference. This was tested during each multipoint session established with the SUT by disconnecting single and multiple conferees. This was done by hanging up and simulating a failure by disconnecting the physical interface. 100 percent of the time during the test, the remaining conferees on the multipoint conference were not affected and remained in the conference.

(4) An audio add-on interface, implemented independently of an Integrated Access Switch (IAS), shall be in accordance with the UCR, appendix 7. The SUT met this requirement through testing and the vendor's LoC.

(5) A VTC system/endpoint that uses an integrated BRI interface to connect to the DSN shall be in conformance with the requirements associated with a Terminal Adaptor (TA) as described in the UCR, appendix 7. The SUT met this requirement through testing and the vendor's LoC.

(6) The physical, electrical, and software characteristics of Video Teleconferencing Unit system(s)/ endpoint(s) that are used in the DSN network shall

not degrade or impair the serving DSN switch and its associated network operations. This was tested by conducting other tests on the serving DSN switch to include bulk call loading while point-to-point and multipoint video sessions were established. 100 percent of the time during the test, the SUT physical, electrical, and software characteristics did not impair the serving DSN switch and its associated operations.

c. Test Summary. The SUT met the critical interface and functional requirements for a VTC system for the interfaces depicted in table 2-1, as set forth in Appendix 8 of reference (c), and is certified for joint use within the DSN. The SUT also met the requirements for the ITU-T H.323 interface standard; however, Assured Service is not yet defined for the ITU-T H.323 interface. Since ITU-T H.323 interfaces do not provide Assured Services during a crisis or contingency, users' access to the DSN will be on a best effort basis. Therefore, Command and Control (C2) VTC users and Special C2 VTC users are not authorized to be served by an ITU-T H.323 interface.

12. TEST AND ANALYSIS REPORT. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) System, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at <https://stp.fhu.disa.mil>. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at <http://jit.fhu.disa.mil> (NIPRNet), or <http://199.208.204.125> (SIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at <http://jitc.fhu.disa.mil/tssi>.